

What is claimed is:

1. A method for applying heat spreaders to a plurality of plasma display
5 panels, comprising (a) providing a plurality of heat spreader composites, each
of which comprises a heat spreader material having an adhesive thereon and
a release material positioned such that the adhesive is sandwiched between
the heat spreader material and the release material; (b) removing the release
material from a plurality of the composites; and (c) applying at least one of
10 the composites to each of the plurality of plasma display panels each such
that the adhesive adheres the heat spreader material to the plasma display
panel.
2. The method of claim 1 wherein the release material and adhesive are
15 selected to permit a predetermined rate of release of the release material
without causing undesirable damage to the heat spreader material.
3. The method of claim 2 wherein the adhesive and release material
provide an average release load of no greater than about 40 grams per
20 centimeter at a release speed of one meter per second.

4. The method of claim 3 wherein the average release load is no greater than about 10 grams per centimeter at a release speed of one meter per second.

5 5. The method of claim 3 wherein the adhesive achieves a minimum lap shear adhesion strength of at least about 125 grams per square centimeter.

6. The method or claim 5 wherein the adhesive achieves an average lap shear adhesion strength of at least about 700 grams per square centimeter.

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7. The method of claim 5 wherein the adhesive results in an increase in through thickness thermal resistance of the adhesive/heat spreader material of not more than about 35% as compared to the heat spreader material itself.

15 8. The method of claim 7 wherein the thickness of the adhesive is no greater than about 0.5 mils.

9. The method of claim 8 wherein the thickness of the adhesive is no greater than about 0.25 mils.

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10. The method of claim 1 wherein the heat spreader material comprises graphite.

11. The method of claim 10 wherein the heat spreader material comprises at least one sheet of compressed particles of exfoliated graphite.

5 12. The method of claim 11 wherein the heat spreader material comprises a laminate comprising a plurality of sheets of compressed particles of exfoliated graphite.

13. A heat spreader adaptable for high volume manufacturing of a heat
10 source, comprising a heat spreader composite, which comprises a heat spreader material having an adhesive thereon and a release material positioned such that the adhesive is sandwiched between the heat spreader material and the release material, wherein the release material and adhesive are selected to permit a predetermined rate of release of the release material
15 without causing undesirable damage to the heat spreader material.

14. The heat spreader of claim 13 wherein the adhesive and release material provide an average release load of no greater than about 40 grams per centimeter at a release speed of one meter per second.

15. The heat spreader of claim 14 wherein the average release load is no greater than about 10 grams per centimeter at a release speed of one meter per second.

5 16. The heat spreader of claim 14 wherein the adhesive achieves a minimum lap shear adhesion strength of at least about 125 grams per square centimeter.

10 17. The heat spreader or claim 16 wherein the adhesive achieves an average lap shear adhesion strength of at least about 700 grams per square centimeter.

15 18. The heat spreader of claim 16 wherein the adhesive results in an increase in through thickness thermal resistance of the adhesive/heat spreader material of not more than about 35% as compared to the heat spreader material itself.

19. The heat spreader of claim 18 wherein the thickness of the adhesive is no greater than about 0.5 mils.

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20. The heat spreader of claim 20 wherein the thickness of the adhesive is no greater than about 0.25 mils.

21. The heat spreader of claim 13 wherein the heat spreader material comprises graphite.

5 22. The heat spreader of claim 21 wherein the heat spreader material comprises at least one sheet of compressed particles of exfoliated graphite.

23. The heat spreader of claim 22 wherein the heat spreader material comprises a laminate comprising a plurality of sheets of compressed particles
10 of exfoliated graphite.

24. A method for applying a heat spreader to a heat source, comprising (a) providing a heat spreader composite, which comprises a heat spreader material having an adhesive thereon and a release material positioned such
15 that the adhesive is sandwiched between the heat spreader material and the release material; (b) removing the release material from the composite; and (c) applying the composite to a heat source such that the adhesive adheres the heat spreader material to the heat source,
wherein the release material and adhesive are selected to permit a
20 predetermined rate of release of the release material without causing undesirable damage to the heat spreader material.

25. The method of claim 24 wherein the adhesive and release material provide an average release load of no greater than about 40 grams per centimeter at a release speed of one meter per second.

5 26. The method of claim 25 wherein the average release load is no greater than about 10 grams per centimeter at a release speed of one meter per second.

27. The method of claim 25 wherein the adhesive achieves a minimum lap
10 shear adhesion strength of at least about 125 grams per square centimeter.

28. The method or claim 27 wherein the adhesive achieves an average lap shear adhesion strength of at least about 700 grams per square centimeter.

15 29. The method of claim 27 wherein the adhesive results in an increase in through thickness thermal resistance of the adhesive/heat spreader material of not more than about 35% as compared to the heat spreader material itself.

30. The method of claim 29 wherein the thickness of the adhesive is no
20 greater than about 0.5 mils.

31. The method of claim 30 wherein the thickness of the adhesive is not greater than about 0.25 mils.

32. The method of claim 24 wherein the heat spreader material comprises
5 graphite.

33. The method of claim 32 wherein the heat spreader material comprises at least one sheet of compressed particles of exfoliated graphite.

10 34. The method of claim 33 wherein the heat spreader material comprises a laminate comprising a plurality of sheets of compressed particles of exfoliated graphite.